

A NEW SPECIES OF *ASPHONDYLIA* (DIPTERA: CECIDOMYIIDAE)
ON *BORRICHIA* (ASTERACEAE) FROM FLORIDA

ANTHONY M. ROSSI AND DONALD R. STRONG

Department of Biological Science, Florida State University, Tallahassee, Florida 32306.

Abstract.—A new species, *Asphondylia borrichiae*, a gall former on the apical growing region of the stems of sea daisy, *Borrichia frutescens* (L.) DC. (Asteraceae), is described with illustrations. Adults from *A. borrichiae* were reared from galls collected year-round from the salt marshes along the Gulf coast of Wakulla County, Florida.

Key Words: gall former, sea daisy

The sea daisy, *Borrichia frutescens* (L.) DC. is a fleshy salt-tolerant herb that grows in discrete patches along Florida's northern Gulf coast (Bell and Taylor 1982, Stiling et al. in prep). The apical growing region of *B. frutescens* is attacked by an undescribed species of *Asphondylia* (Diptera: Cecidomyiidae) (Gagné 1989). According to Gagné (1989), the gall is known from North Carolina, Florida, and Mexico. We are currently studying this species in both the laboratory and in the field (Stiling et al. in prep.), and describe the gall midge to provide a name for our further studies. While many species of *Asphondylia* are known, there is no modern revision with keys for identification. Further, most species have been described from adults only, a stage that is remarkably homogeneous in the genus (Gagné, pers. comm.). Most cecidomyiids are mono- or oligophagous (Gagné 1989), and because no species has been described from *B. frutescens*, we regard this gall midge from *Borrichia* as a new species. This paper describes the new species with the guidelines used in Hawkins et al. (1986). The figures should allow anyone to identify larvae and pupae of this species from *Borrichia* and compare it with other species, particularly those on Asteraceae.

MATERIALS AND METHODS

Mature galls lacking emergence holes were collected, approximately once a month, from May to August, 1989 from seven sites around the Oyster Bay area of Wakulla County, Florida. Galls were taken to the laboratory and placed in 25 dram vials with a moist piece of filter paper. The vials were checked daily and any emerged flies were immediately placed in 70% ETOH. A subsample of adults was used in the following species description. In addition, several galls were immediately dissected upon return to the laboratory and third instar larvae and pupae were extracted for illustration.

To assess gall characteristics, the maximum width of ten mature green galls with emergence holes was measured at each of the seven study sites during mid-July. On 5 September, 112 additional galls were collected from the study sites and dissected to estimate clutch size per gall by counting the number of chambers within the gall.

Asphondylia borrichiae Rossi and Strong,
NEW SPECIES

Adult.—*Color:* Eyes black, scutum dark brown, abdomen light brown. *Antenna:* females, mean ratio of scape:pedicel, 2.2:1 (N = 10); mean ratio of first flagellomere:

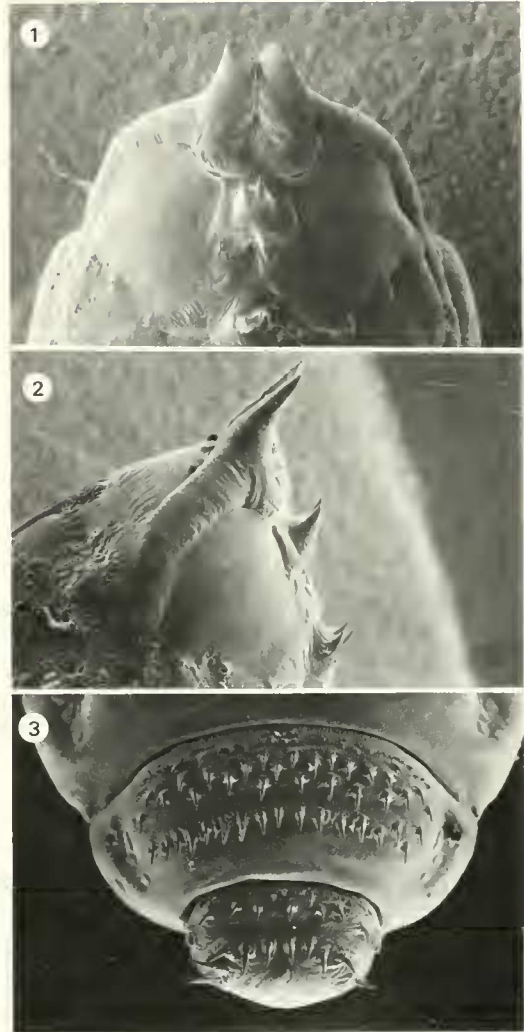
scape, 2.3:1 (N = 10); males, 2.5:1 (N = 10) and 2.2:1 (N = 10) respectively. First flagellomere cylindrical, flagellar segments successively shortened distally. Palpal segments bearing many setae, first segment tiny; second and third segments elongate, 2nd segment wider than 3rd; females, mean ratio of 1st, 2nd, and 3rd palpal segments, 1:2:5.8 (N = 10), males, 1:2:5.4 (N = 10). Wing length: males, range: 2.6–3.6 mm (N = 38), mean = 3.2 ± 0.04 (SE) mm; females, range: 2.8–3.7 mm (N = 36), mean = 3.3 ± 0.04 (SE) mm. Scutum with dorsocentral row of setae single to double approximately $\frac{1}{3}$ from the anterior margin of scutum. Tarsal claws of similar shape among legs and between sexes and approximately as long as empodia. Mean ratio of ovipositor from base to tip of rigid shaft 2.8-times (N = 10) length of sternite 7.

Pupa (Figs. 1–3).—Antennal horns curved ventrally; serrated along interior margin. Both upper and lower frontal horns pointed anteriorly. Upper frontal horn bifid; lower frontal horn trifid. Posterior abdominal tergal spines on segments 3–8 separated from slightly smaller, anterior row of spines.

Larva (third instar) (Figs. 4, 5).—Cream to yellow in color. Spatula as in Fig. 4, quadridentate, the two inner teeth shorter than the outer pair. Four lateral papillae present on either side of the spatula. Terminal segment with one pair of dorsal papillae.

Type material.—All specimens deposited in National Museum of Natural History, Washington, D.C. **Holotype.**—Pupa, ex *Borrchia frutescens* gall, 5 May 1989, St. Mark's Wildlife Refuge, Wakulla County, Florida, A. M. Rossi. **Paratypes:** 10 females, 10 males, 5 pupae, 5 larvae, all with same data as holotype.

Galls.—These are located on the stems at the apical growing point, usually with one or more swollen pairs of leaves associated with them (Fig. 6). Galled shoots are often prevented from flowering, but flowering is occasionally seen above the galled growing point. Post-emergence galls and associated



Figs. 1–3. *Asphondylia borrichiae*. 1 and 2. Pupal head: 1, ventral; 2, lateral; 3. Pupal abdomen, dorsal. Scale: — = 100 μ m.

leaves rot and turn black. After the apical growing region rots, the plant sends out a new shoot from a lower meristem. Live galls were collected year-round from Oyster Bay, although gall density varied greatly throughout the year. Adults were reared every month in northwest Florida (Stiling et al. in prep).

The maximum diameter of mature galls averaged 0.9 ± 0.02 (SE) cm (N = 70; range: 0.645–1.43). In addition, the mean number

4



5



6



Figs. 4, 5. *Asphondylia borrichiae*. 4 and 5, Larval parts: 4, spatula; 5, terminal segment, dorsal.
Fig. 6. Gall of *Asphondylia borrichiae* on its host plant, *Borrichia frutescens*; note: puparium present at 11 o'clock position.

of chambers per gall was 1.91 ± 0.08 (SE) (N = 112; range: 1-5).

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